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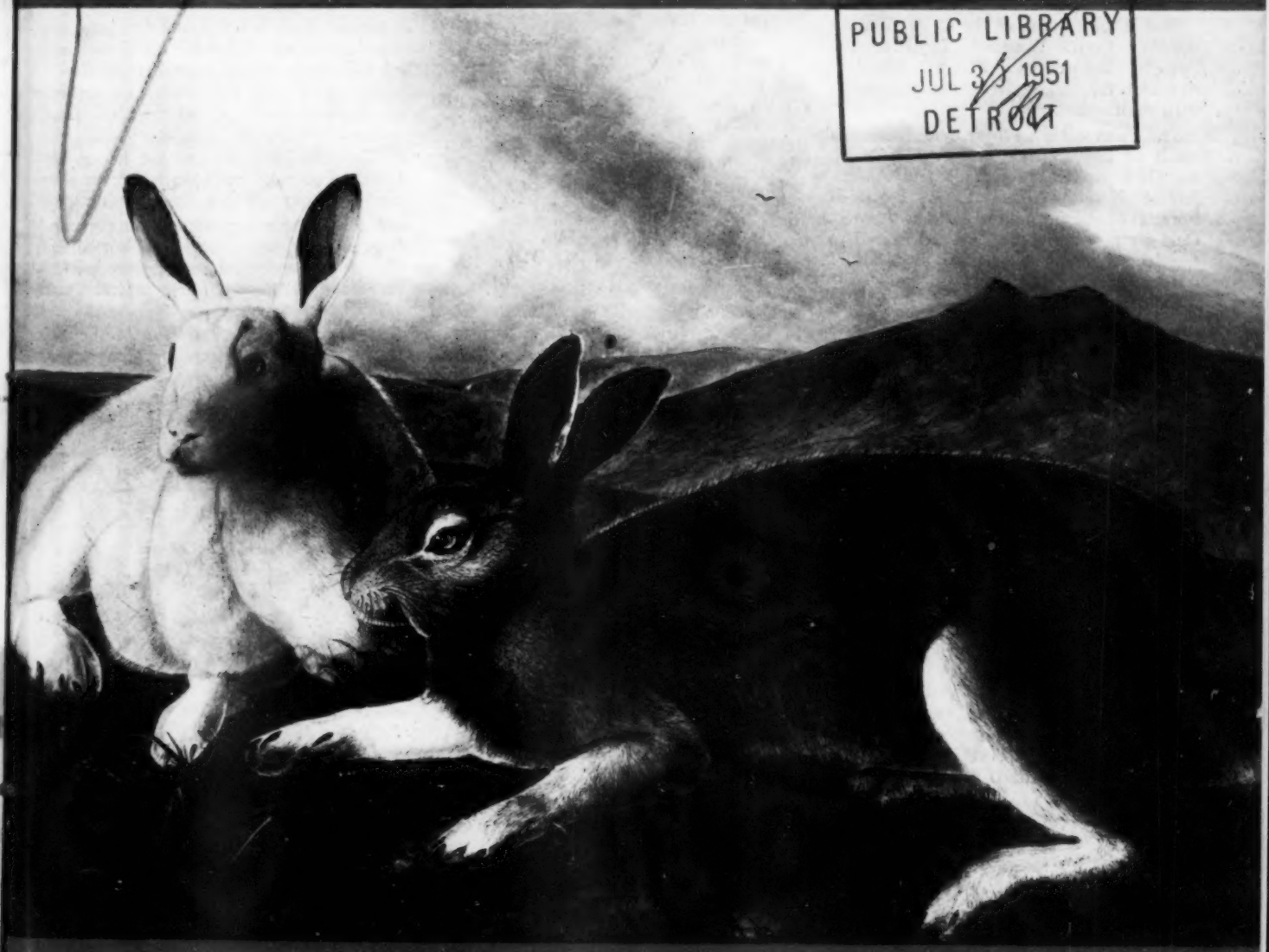
July 28, 1951

SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE



Audubon's "Snow Rabbits"

See Page 55

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GENERAL SCIENCE

Disastrous Midwest Flood

Unusual weather conditions, found only once every hundred years in any one area, cause record floods in Kansas and Missouri.

➤ THE WEATHER conditions which were responsible for the rains which produced the Kansas-Missouri flood occur somewhere in the country about once each year. But they are only likely to happen in the Kansas-Missouri area, or at any other one spot, about once every 100 years.

This is the opinion of the U. S. Weather Bureau's I. R. Tannehill, head of the Synoptic Reports and Forecast Division. Artificial rainmaking had nothing to do with the flood.

The rains came in June and July as a result of conditions in the Pacific Ocean, the Gulf of Mexico, Canada and Alaska, Jerome Namias, chief of the Extended Forecast Section, told SCIENCE SERVICE. Cold air masses, he said, were delivered to the central plains states from the Gulf of Alaska and Canada.

"The chief delivering agent," he explained, "was an unusually strong area of high pressure in the eastern Pacific which extended its influence up to at least 40,000 feet and poured supplies of cold air into the northern and central plains.

"Coming up to meet these onrushing streams of cold air," Mr. Namias went on, "was a hot, moisture-laden current of air from the Gulf of Mexico. The two currents met repeatedly in the Kansas-Missouri area and there the warm moist stream of air, being lighter, was lifted over the cold air and forced to release its moisture in heavy rain."

Mr. Namias said that the abnormally cold weather observed during June and early July in the northern plains and northern Rocky Mountain states and the very hot weather in the western Gulf states were evidence of the great contrasting streams of air whose interaction was responsible for the flood rains.

Possible Typhoid Danger

➤ FLOOD VICTIMS need not worry about the danger of getting typhoid fever or other water-spread diseases from the flood waters themselves.

There is more danger of typhoid and dysenteries developing in refugee camps from poor food handling and lack of adequate sanitary facilities.

The flood waters themselves create such a tremendous dilution that the chance of picking up typhoid fever germs is slim, in the opinion of health experts. Cases of typhoid fever are fairly rare in the United States now and of course unless a patient or typhoid carrier is discharging germs into the water, there would be none to cause the disease.

Whether typhoid cases are developing in the flood areas will not be known immediately because it takes about 10 days for the disease to develop after germs have entered the body.

Vaccination against typhoid, though effective for protecting against the disease, is not of much value in an emergency such as the flood situation. The reason is that it takes two to three weeks to get the maximum immunity, or protection, from the vaccination. Persons exposed to the disease during the flood would probably get it before the vaccination could take effect.

Civil Defense Workout

➤ THERE WAS one silver lining to the clouds which produced the flood that raged in Kansas. National, state and local civil defense organizations learned a lot about their jobs with the problems brought about by the flood to practice on.

Federal civil defense officials received constant reports from Kansas on the work of state and local civil defense organizations in caring for the flood victims, evacuating, feeding and housing them. All the peacetime organizations now active in flood relief work—the Red Cross and various branches of the government—will be integrated into civil defense in case of enemy attack.

Civil defense officials plan to use all "natural" disasters as laboratories in which to test existing CD plans and to train officials and volunteers. They point out that a flood does not present all of the problems of an A-bomb attack, a "shock" disaster like a huge explosion is more similar.

However, federal officials say, the civil defense welfare services in Kansas should get a good workout. As would be the case in an A-bomb attack, there are thousands of homeless to take care of. Officials must see to it, too, that disease is not permitted to spread because of the breakdown of the sanitary facilities and water systems.

The Kansas flood also tested the mutual assistance ideas of civil defense. Nearby communities and states not hit by the flood were called upon to help their less fortunate neighbors—just as they would be in an A-bomb attack.

Almost immediately medical and other emergency supplies and planes and helicopters were called in from all parts of the country.

Reports on various phases of the operation are being sent to national civil defense headquarters. These will be the basis for checking the efficiency of the plans and organizational set-up designed to defend the nation against the effects of A-bomb attacks.

Alert for Encephalitis

➤ U. S. PUBLIC Health Service officials will be on the lookout until about the middle of August in the Kansas-Missouri flood areas for outbreaks of so-called sleeping sickness, or encephalitis, and intestinal diseases. City, state and federal health services, however, are pretty well equipped to handle these outbreaks if they come.

Encephalitis is carried by mosquitoes, diarrhea is carried by flies. The hundreds of thousands of square miles of flooded areas will shortly be covered by millions of stagnant pools of water—ideal places for the breeding of mosquitoes.

Flies—the blow fly and the house fly—breed on garbage and sewage, strewn about the landscape, and on wet and rotting grain.

Plans for spraying the breeding grounds have not yet been completed but already Kansas has requested, and received, 24,000 pounds of DDT from the federal Public Health Service.

It is almost sure that some of the $25,000,000 just appropriated by Congress for flood relief will go to keep down the threat of epidemics of these diseases.

As a precautionary move against the possible spread of typhoid, workers in the staggering task of cleaning up areas which were inundated are being vaccinated against that disease. However, public health officials see little danger of an outbreak of typhoid since there was little of the disease around before the flood began. Also, workers are being told to take extra care in washing their hands before they eat.

During the flood itself there was little worry about the spread of disease. Although clean water was in short supply, portable chlorinating stations and Halazone tablets took care of the problem.

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ASTRONOMY

"New Star" Found in Constellation Aquila

➤ A HITHERTO unknown star in the constellation of Aquila, the eagle, has flared up enough to make its presence in the heavens known.

The nova or "new star" is only of 11th magnitude, however, and thus too faint to be seen without a good telescope. It was spotted by Dr. Fritz Zwicky of the California Institute of Technology reports Dr. Ira S. Bowen, Director of the Mount Wilson and Palomar Observatories.

Science News Letter, July 28, 1951

MEDICINE

High Blood Pressure Cause

Hypertension due to mental tensions may be caused by chemical in brain. New drug counteracts this brain chemical's effect in dogs.

➤ THE HIGH blood pressure that comes under conditions of unusual stress, anxiety and mental tension may be due to a chemical in the brain.

Discovery of the chemical and its possible role in some cases of high blood pressure is announced by Drs. Robert D. Taylor, Irvine H. Page and A. C. Corcoran of the Cleveland Clinic in Cleveland.

A relatively new drug that has been helping some patients with this nervous tension type of high blood pressure counteracts the effects of the brain chemical in dogs. This seems to strengthen the idea that the brain chemical is the cause of some human high blood pressure.

The brain chemical has not yet been identified chemically. It is not the same as the known blood-pressure raising substances adrenalin, arterenol, pitressin, renin and angiotonin. It may be the same as the substance in fluid surrounding the brain which, Dr. Page found in 1935, raises the blood pressure in cats.

It may be related to serotonin, a blood-vessel constricting substance isolated in pure form from clotted blood by Dr. Page and associates at the Cleveland Clinic in 1948.

The drug that counteracts this brain chemical is hydrazinophthalazine. This drug is not yet for sale. It does not cure all forms of high blood pressure. It must be given every day, and often there are bad reactions which complicate treatment with it. Dr. Francois Reubi of Basle, Switzerland, was apparently the first to suggest it might be helpful in high blood pressure. Dr. Henry Schroeder of St. Louis has confirmed this view as regards high blood pressure seemingly of nervous origin. (See SNL, June 16, p. 382.)

The discovery of the blood-pressure-raising brain chemical seems to solve some of the riddles of high blood pressure. Doctors have long believed that certain nerves were responsible for high blood pressure by their action on the walls of the blood vessels, causing these to constrict unduly. Nerve-cutting operations, done to relieve high blood pressure, are based on this theory. The operations, however, are not always successful.

Now it appears that the nerves affect blood pressure but not alone by their action on blood vessel walls, which might be called their nervous action. They apparently also affect blood pressure by producing a chemical substance that acts like a hormone, or gland chemical.

Details of the experiments leading to discovery of the brain chemical are reported in the ARCHIVES OF INTERNAL MEDICINE (July).

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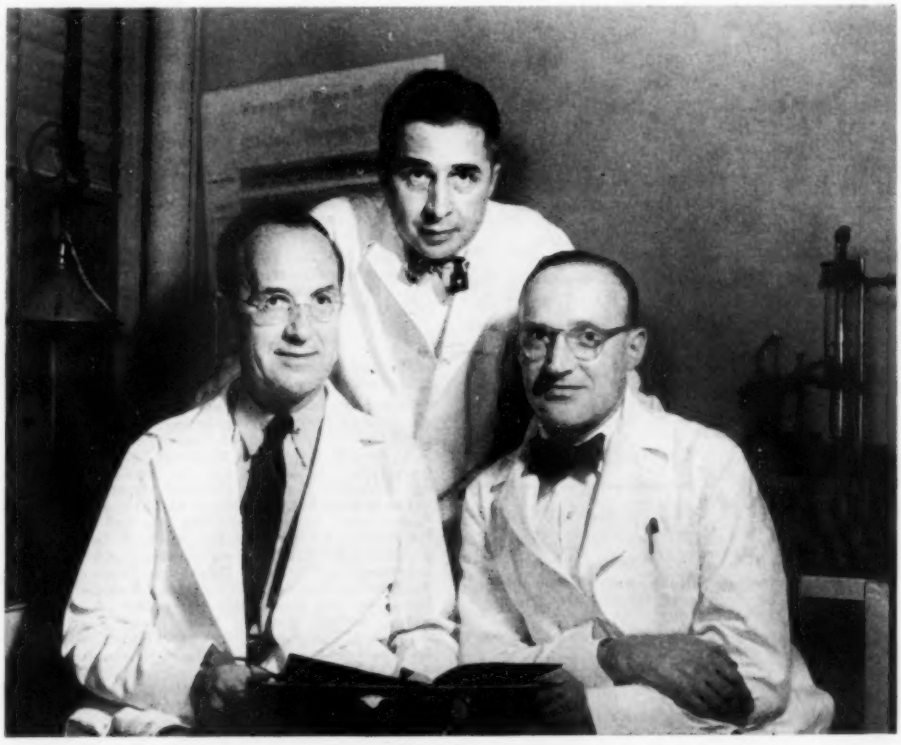

BRAIN-CAUSED HYPERTENSION—These three doctors suggest, on the basis of experiments with dogs, that high blood pressure in some patients may be due to a substance secreted by the brain. Left to right they are, Drs. Irvine H. Page, Robert D. Taylor and A. C. Corcoran of the Cleveland Clinic Foundation.

PSYCHOLOGY

Lap Recorder Charts Every Thirsty Drink

➤ EVERY LAP of the tongue of a drinking animal can be recorded by a new instrument now available to scientists studying thirst and appetites.

Designed especially to measure the water consumption of rats, it can also be used equally well for any other mammal or even birds or reptiles. It records not only how much the animal drinks but also when and how fast, report Drs. J. Harry Hill and Eliot Stellar, of the Johns Hopkins University, in describing the apparatus in SCIENCE (July 13).

The rat, for example, was found to do most of its drinking in the dark and to devote only about 20 minutes out of the 24 hours to satisfying its thirst. He laps at a steady rate of six or seven laps a second, regardless of how long he has been without water or how long he has been drinking.

The rat which has been deprived of water for a time will drink when first given water, perhaps not stopping for as much as eight minutes. Then he stops to rest and then drinks again. The longer he has been without water the shorter will be his rest periods and the longer he will stay at the bottle. Since he always drinks at a constant rate, this means that the longer he has been deprived of water, the more he will drink in a two-hour period when he gets the chance.

The apparatus works because an electric circuit carrying a weak current is connected to the wire-mesh floor of the animal's cage and also to the water contained in its drinking vessel. Every time the animal's tongue touches the water the circuit is completed and a mark is made on the tape of a kymograph.

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PHYSICS

Films Detect Radiation

Photographic film badge, when developed, shows amount of radiation dosage. Another film dosimeter can be processed in one minute.

➤ A SIMPLE photographic film badge, pinned to the shirt of a worker in a area where he may be exposed to high-energy X-rays, has applications ranging from activities in the television industry to rescue work in regions damaged by an atomic bomb.

Details of this photographic film dosimeter, as it is called, are revealed by the National Bureau of Standards where it was developed under the direction of Margarete Ehrlich. At regular intervals this NBS film worn by the worker is developed and the amount of radiation dosage for a given period of time is determined.

Tests on a somewhat similar dosimeter, just completed, are reported from Randolph Field, Texas, by the U. S. Air Force. The device tested is called by the Air Force a self-developing film badge which was submitted to it for evaluation.

Essentially the badge is a miniature film pack, the Air Force states. The pack may be pinned on a shirt or attached to the dog tag around the airman's neck. It contains a chemical pod that develops and fixes the film automatically when it is withdrawn from the pack.

The developing process takes only one minute, and gives an immediate record of the amount of radiation absorbed while the pack was worn. The film used is described by Randolph Field officials as "those self-developing types that camera addicts wield at picnics and on fishing trips."

These film dosimeters are designed as inexpensive devices to detect dangerous radiation and supplement the standard instruments known as Geiger counters and similar radiation meters. The effectiveness of the film type depends upon the emulsion employed.

In the work of the Bureau of Standards the first major problem encountered was to select film emulsions that would detect dosages within the required ranges. A total of 16 were tested, and four were selected as satisfactory. A second problem was to devise means that would make the response of the emulsions independent of the extraneous electron flux and of the radiation energy. The NBS film badge uses an absorber made of extremely thin tin and lead placed over a container made of thin Bakelite, the latter protecting the film from secondary electrons.

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PHYSICS

Radioisotopes Increased For Export from U. S.

➤ TO ASSIST in extending the scope of international cooperation in science, the U. S. Atomic Energy Commission has enlarged its radioisotope export program to include all radioactive materials now sold in this country on an unrestricted basis. For the first time it has made U. S.-produced radioisotopes available to foreign users for industrial research.

The number of U. S.-produced isotopes available to buyers in foreign countries has been increased from 26 to 99. Among the more useful of the newly-available isotopes are cesium 137, yttrium 91, selenium 75 and tantalum 182, which all have valuable applications in industrial research; chromium 51, nickel 59 and 63, and tungsten 185, which are useful in metallurgical research, and rubidium 86, which is a valuable substitute for the shorter-lived sodium 24 and potassium 42 in agricultural research.

American manufacturers can now export radioactive thickness gages, which are finding increasing application in a number of different industrial processes.

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Question Box

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From what part of the U. S. will the sun's next eclipse be visible? p. 58.

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Photographs: Cover, pp. 54 and 55, National Gallery of Art; p. 51, A. R. Thiel Co.; p. 53, General Electric Company.

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NATURAL RESOURCES

Free Flow of Iranian Oil

Free flow of Iran's oil to other parts of world conserves U. S. supplies and also builds up the industries of Marshall Plan countries.

➤ THE FREE flow of oil from Iran to Western Europe and to other parts of the world plays a part in American economy by conserving American supplies for domestic uses while at the same time building up the industries of the Marshall Plan nations to free them from further financial aid from the United States.

This is one of the reasons why a representative of the President of the United States is now in Iran in the hope of bringing about an understanding between the Iranian government and the British-owned oil company that developed and maintained oil-mining in that country. The main objective of immediate importance is to keep the oil flowing.

Iran is but one of six nations in the Middle East that is producing oil but it is the first in which oil production was developed commercially. The modern oil industry in the Middle East began in 1902 when a British company drilled its first well in western Iran, then Persia. Oil was found, but not in large quantities.

The British activities were then moved south into foothills 130 miles from the north end of the Persian Gulf. In 1908, a gusher was struck. Other wells followed. A pipeline was installed to carry the oil to one of the world's largest refineries from which products were loaded on tankers to travel by way of the Gulf to distant markets. Production last year average 663,700 barrels a day.

Iran, Iraq, Saudi Arabia, Kuwait, Bahrein and Qatar are the six oil-producers of the Middle East, according to *The Lamp* (June), publication of the Standard Oil of New Jersey. This company, and other American companies, have contracts with the Anglo-Iranian Oil Company, the British firm, for large quantities of crude for delivery over the next 20 years.

Iraq is second oldest among the six nations in oil production. This country, formerly known as Mesopotamia, in 1925 granted an oil concession to a group including British, Dutch and French interests. In 1928, several American oil companies, including the Standard Oil of New Jersey, joined the group. This was the first time American oil companies shared in a concession in the Middle East.

Iraq's great oil field is in northern part of the country close to the border of Iran. It is the famous Kirkuk field. Pipelines now carry oil from Iraq to the Mediterranean Sea. A 30-inch line under construction will bring carrying capacity of the pipelines up to 610,000 barrels a day. At present, production is 136,200 barrels a day but larger quantities will be mined when the new pipeline is open.

Kuwait, Delaware-size nation between Iraq and the Persian Gulf, started oil production in 1938. Last year a daily average of 345,000 barrels was obtained, making it the third largest producing country in the Middle East. Production is by a British-American partnership.

Bahrein is a small Arab nation including 210 square miles of territory on islands off the Arabian shore in the Persian gulf. Oil production is by an American company and is about 30,200 barrels a day. But on one of the islands is a refinery of 160,000-barrels-a-day capacity that handles crude from the Saudi Arabian mainland.

Qatar is a nearby peninsula, worked by American interests, that produced 34,100 barrels a day during the past year.

Saudi Arabia, a country still known to many as just Arabia, is the second largest oil-producing nation of the Middle East, yielding 546,700 barrels a day during the past year. Oil concessions are owned jointly by four American oil companies, and the first commercial discovery of oil was made in 1938.

In December, 1950, a 30-inch pipeline connecting the oil fields on the western shore of the Gulf of Persia to the Mediterranean was completed. This pipeline, 1,068 miles in length, has a capacity of 300,000 barrels a day.

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INVENTION

Patent Split Nail to Hold Building Materials

➤ HARD COVERINGS of slate, wood or other building materials are attached firmly to fibrous wallboard with a nail which has spreading points on which patent 2,560,643 was issued to Robert Lay Hallock, Larchmont, N. Y. Patent rights are assigned to Elastic Stop Nut Corporation of America, Union Township, N. J.

This split nail, made of a malleable metal, is so shaped that, when driven into a material, the sharpened ends cause the prongs to spread and make a firm hold. These nails are claimed to be especially effective in holding slate or asbestos shingles to sidewalls of a building, even a structure whose sidewalls are fibrous wallboards.

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TELEVISION ANTENNA — This radically different type of TV antenna is for use in ultra-high-frequency transmission, expected to play a major role in future television expansion. Designed by General Electric engineers, it is known as a "helical" antenna.

MARINE BIOLOGY

Probe Mystery of Why Tropical Fish Turn Poisonous

➤ WHY SOME tropical fish, usually edible, suddenly become poisonous as food is being probed by scientists.

Laboratories for these studies are the sun-bleached coral reefs and the blue tropical lagoons of South Pacific islands, some of which are familiar to soldiers, sailors and Marines during World War II. There the fish are caught and shipped frozen to the States. At Loma Linda, Calif., tests are made for poisonous effects.

For people who depend largely on fish for food, the mysterious sudden poisoning effect is a serious problem. Dr. Bruce Halstead of the School of Tropical and Preventive Medicine and his associates hope that epidemics caused by the unpredictable poison outbreaks can be brought under control, and perhaps forecast, when their studies are completed.

While capable of dealing quick death, fish poisons have been known to produce a disturbance known as "paradoxical sensory disturbance" in which there is apparent reversal of hot and cold sensations. A victim of such poisoning would think a glass of ice water a hot drink.

The project has been aided by grants from the Office of Naval Research and the Public Health Service.

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ARCHAEOLOGY

Birth Record Dates House

Exact date and time of child's birth, as shown in horoscope giving aspect of heaven at the time, help to date archaeological ruins.

➤ A BABY born at 10 o'clock in the evening of July 3, in the year 176 A.D. has helped twentieth century archaeologists to date the ruins of the house where he first saw the light of day.

Dr. Jotham Johnson, of the Yale expedition to the Roman fortress city of Dura, tells the story of how this happened, in ARCHAEOLOGY (Summer, 1951).

It was because the child's family was interested in astrology. They had a horoscope made, showing the aspect of the heavens at the moment of the baby's birth and the horoscope was, for safe keeping, cut deeply into the plaster of the courtyard wall. Later the house was redecorated and a new coat of plaster laid on over the old, hiding the horoscope and preserving it for centuries.

Dr. Johnson, like many archaeologists, does not put aside his interest in his science when he lays down his digging tools for the day. In walking back from the Palmyra Gate to the camp of tents, he frequently wandered from his path to follow the outline of ancient buildings showing through the thin soil. Along the way he noticed here and there private houses or single rooms that had been more or less cursorily excavated. These, Dr. Johnson learned, had been dug, for fun, by a squad of soldiers stationed at Dura to prevent clandestine digging.

Cut on one of the house walls, Dr. Johnson found an ellipse with cross lines dividing it vertically and horizontally and Greek letters written at 12 points corresponding to the hours on a clock face. With the aid of a Greek dictionary, he figured out that this was a true horoscope, and it occurred to him it might be used to determine the date of the site.

On his return to Yale he presented the horoscope to the astronomer Dr. Dirk Brouwer and enlisted his aid in figuring out the date on which the heavens would have had the appearance indicated. Working together, they were able to find, not only the year, 176 A.D., but the month and day, July 3, and the hour, about 10 p.m.

During the study, it also became evident that at Dura in 176 A.D., under Roman occupation, the Seleucid Era, the Macedonian month names, and some form of lunar calendar were all still in use and the correspondence between the Dura date Panemos 9, 487 S.E. and the Julian date July 3/4 176 A.D. could be used to solve other archaeological and astronomical puzzles.

Dura, located on the Middle Euphrates, was discovered about 30 years ago. Since then it has become famous among archaeologists for the extraordinary light excavations there have thrown on the Greco-Arab society of Mesopotamia.

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MEDICINE

Polio Epidemic Decided In Next Week or So

➤ THE NEXT week or so will tell whether infantile paralysis is going to jump to epidemic heights this summer, in the opinion of public health experts.

Places to watch now are the big centers of population in the northern part of the country.

A prediction of 27,000 cases for the year 1951, made by Dr. Fay M. Hemphill, University of Michigan statistician, may be upset by what happens in the big cities of the north. If they do not have much polio, his "guesstimate" will probably be too high. If the disease does flare up in the north, his figure may be too low for the national total.

Of the northern states, Minnesota so far has been running a very low count on polio cases. Recent reports show cases up a little in Illinois and New York and Michigan.

Although cases throughout the nation so far have been lower than last year, the peak of the epidemic last year did not come until late.

A peculiar feature of polio this year is that so far there has been nothing like an epidemic area. Possible exceptions are Shreveport, La., although cases there are not going up very fast, and Corpus Christi, Tex. This outbreak now is stationary.

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BIOPHYSICS

To Match Colors, Don't Lie Down on the Job

➤ WHEN YOU are matching colors do not lie down on the job. The way you see colors is affected by the position of your body, Dr. J. N. Aldington of the Lamp Research Laboratories, Siemens Electric Lamps and Supplies, Ltd., at Preston, England, reported in a communication to the British science journal NATURE (July 14).

Standing upright on your feet, both your eyes see colors in about the same way. This is usually your posture when you are trying to match the color in a sample. And when you are lying down on your back the color vision of both eyes is alike, also. But if you roll over on one side, the lower eye is more sensitive to red than is the one on top, Dr. Aldington reports. The upper eye is more sensitive to blue. If you turn over on the other side, the color sensitivities of the two eyes are reversed.

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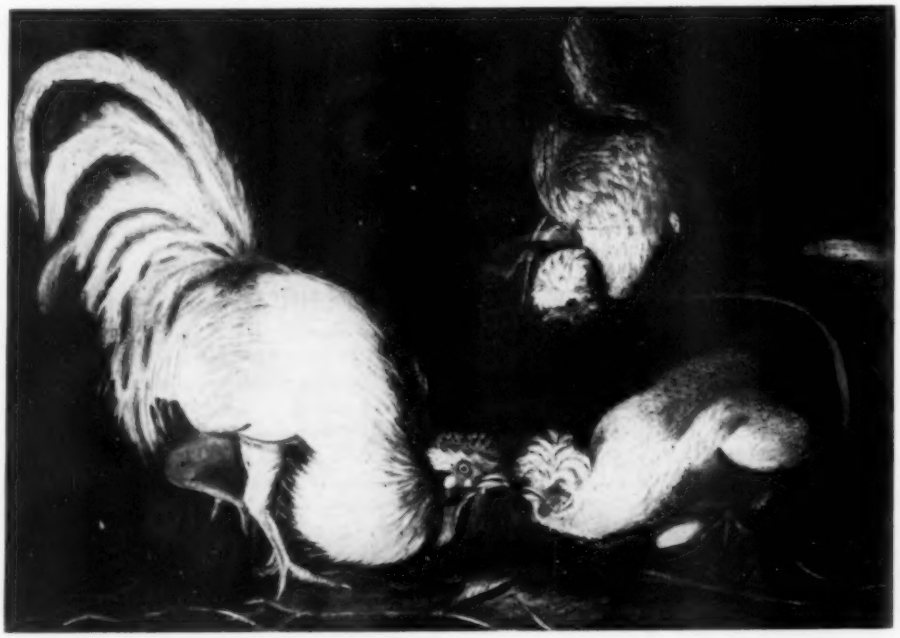

"FARMYARD FOWLS"—These three chickens, painted by Audubon, reportedly in one morning, are Sultans. Sultans apparently resulted from a cross between White Polish and Booted White Bantam hens and were imported into Europe from Turkey in the 19th Century.

AUDUBON'S "FOX"—A Cross Fox, Vulpes fulva, is identified by a black stripe down his back and another across his shoulders, forming a cross, part of which is visible in this photograph of one of J. W. Audubon's paintings. A Cross Fox is one of the phases of the red fox.

MEDICINE

Warn On Miracle Drugs

Danger comes from the good done by the antibiotic drugs—they are so effective, other, more resistant germs may flourish.

➤ A WARNING of dangers connected with widespread use of sulfa drugs, penicillin and other "miracle" drugs was given by Dr. Wesley W. Spink, University of Minnesota professor of medicine, in his address at the International Congress of Clinical Pathology in London.

One new danger comes from the good done by the antibiotic drugs, penicillin, streptomycin, aureomycin, terromycin and chloromycetin. Because these are so effective against some disease germs, other more resistant ones are given more chance to thrive in human tissues and to cause serious disease.

"More and more blood stream infections are being caused by gram-negative organisms (the resistant bacteria associated with kidney infections) which have their reservoir in the normal gastro-intestinal tract," Dr. Spink declared. "This phenomenon of a group of bacteria being given a chance to grow at the expense of another group is an excellent example of how difficult it is to control nature.

"The antibiotics solve the problems associated with one group of infections but in doing so upset biological equilibrium and new problems are induced."

Second danger seen by Dr. Spink is that of taking the wrong antibiotic. This happens when the drug is taken, often without the advice of a doctor, before a correct diagnosis is made.

Penicillin brings dramatic improvement for a patient with a strep. sore throat, for example. But when the sore throat is due to diphtheria, penicillin may not prevent a fatal illness.

Development of germs resistant to antibiotics is one of the more serious medical problems today, Dr. Spink stated.

He stressed the importance of selecting the right antibiotic for each infection, and of combining two or more for treatment of some infections, such as brucellosis.

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WILDLIFE

Audubon Painting On This Week's Cover

➤ A PHOTOGRAPH of one of the eight original Audubon paintings, entitled "Snow Rabbits," presented to President Truman at the White House on July 18 is shown on the cover of this week's SCIENCE NEWS LETTER.

The gift collection consists of 10 oil paintings, two others of which appear on p. 54 and opposite. Not until early this week was it known that two of the ten were by the son, J. W. Audubon, and not by the father.

The paintings are a gift to the American people from E. J. L. Hallstrom, Australian philanthropist and a director of the Taronga Park zoo. They will soon be put on exhibition at the National Gallery of Art. Mr. Hallstrom bought the paintings from John James Audubon's great-great grandson, Leonard Audubon.

The "Snow Rabbits" are really Arctic Hares, *Lepus articus*. One is in winter garb on the left, one in summer garb on the right. The rabbits themselves are painted in water color, while the background is done in oils.

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MEDICINE

Terramycin Effective Against Venereal Disease

➤ TERRAMYCIN, one of the newest of antibiotics, is the weapon with which gonorrhea can be virtually eliminated. This is the hope following tests on human patients reported by a Harlem Hospital group directed by Dr. Louis T. Wright.

Two other venereal diseases are treated successfully by terramycin. One of these is lymphogranuloma venereum, a virus infection found in both the tropics and the temperate zone, said to be increasing rapidly. Another is granuloma inguinale, once thought to be confined chiefly to the tropics but now increasingly prevalent in the United States. A study of this disease under terramycin attack was made by a group at the Medical College of Georgia, Augusta, led by Dr. Robert B. Greenblatt.

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BIOPHYSICS

Eye's Side Glances Important in Driving

➤ A CHILD running toward a motorist from the sidewalk or a truck approaching from a side road—these may be as dangerous as what is going on directly ahead of the driver on the road.

An instrument to test side-vision has been accepted as an exhibit in the Franklin Institute's Science Museum in Philadelphia.

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NUTRITION

Normal Babies' Diets Have Sufficient Vitamin B12

➤ BABIES ON a mother's or cow's milk diet get enough vitamin B_{12} and folic acid, so for normal infants there is no need to add either of these substances to the diet.

This advice was presented in the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION (July 14) as an authorized report of the Association's Council on Foods and Nutrition.

Babies "being fed artificially with cow's milk formulas would receive as much vitamin B_{12} and folic acid as the breast-fed infant, because these formulas usually contain 50% to 70% cow's milk," the report states.

If the baby does have a deficiency of either this vitamin or folic acid, it is more likely to result from abnormalities within the individual child rather than from the lack of adequate intake.

Recent studies have shown that vitamin B_{12}-antibiotic combinations fed to poultry and swine produce spectacular spurts in the animal's growth. Using either B_{12} or folic acid to speed up the normal growth of healthy babies should be approached with a cautious attitude, and studies reporting improved growth from these supplements "will have to be appraised critically."

That vitamin requirements are interrelated was noted by the report in discussing the role of ascorbic acid in the requirement of folic acid.

"When adequate ascorbic acid is available," the report states, "the normal infant's need for folic acid appears to be satisfied by the small amounts normally present in milk."

The report recommends careful studies of growth in order to learn more about vitamin B_{12} and folic acid deficiencies.

Science News Letter, July 28, 1951

PUBLIC HEALTH

Vacation First Aid: Artificial Respiration

➤ IF SWIMMING, fishing and boating are on your vacation schedule, you want to be prepared to give artificial respiration in case of a drowning accident. New methods such as the hip lift and hip roll have been developed but for the average untrained person, the prone-pressure method is considered the easiest and best. Here are directions for it:

1. Lay the patient on his belly, one arm extended directly overhead, the other arm bent at elbow with the face turned outward and resting on hand or forearm. Nose and mouth must be free for breathing.

2. Kneel straddling the patient's thighs with your knees at such a distance from his hip bones as will allow you to place you hands as follows: Palms of your hands on the small of the patient's back, fingers resting on the ribs, little fingers just touching the lowest ribs. Thumbs and fingers should be in a natural position with the tips of the fingers just out of sight.

3. With your arms straight, swing forward slowly so that the weight of your body is gradually brought to bear on the patient. Your shoulder should be directly over the heel of your hand at the end of the forward swing. Do not bend your elbows. This forward swing should take about two seconds.

4. Immediately swing backward so as to remove the pressure completely.

5. After two seconds, swing forward again. Repeat deliberately 12 to 15 times a minute the double movement of compression and release.

6. Continue artificial respiration without interruption until natural breathing is restored or until a physician pronounces the patient dead. You may have to continue it for four hours or longer.

7. As soon as artificial respiration has been started and while it is being continued, have an assistant loosen any tight clothing about the patient's neck, chest and waist.

Science News Letter, July 28, 1951

AERONAUTICS

Large-Size Helicopter, Jet Powered, May Serve England

➤ JET-PROPELLED, 100-passenger helicopters are proposed in England, and design studies have been prepared by several firms, it was revealed in London. The jets would be positioned at the tips of the blades. Gas-turbine builders are planning to adapt their engines for the proposed aircraft.

England is going for helicopters in a big way. The Korean experience has proven their value in military operations. But in this populous country is a definite thought that the helicopter is particularly suitable on short-haul routes for passengers. These include both hops between nearby centers and feeder routes from outlying points to airports for long-distance transports.

Five of the 20 main British aircraft manufacturers are now building or planning to build helicopters. One has announced plans for a machine with three large or six small jet engines. It would be capable of carrying 100 fully equipped troops. It would weigh 80,000 pounds, and its rotor blades would span 110 feet.

Another manufacturer has begun preliminary development work on a helicopter driven by two gas turbines. It is a 23-seater, with a cruising speed of 134 miles per hour. A notable feature is the proposed position for the engines. They would be outside the fuselage, not inside as in all present helicopters. The air jet will flow out to the tips of the rotor blades.

Science News Letter, July 28, 1951

IN SCIEN

PHYSICS

Sonar Reveals Bedrock Along Chicago Waterfront

➤ CHICAGO NOW knows how deep the bedrock lies along its waterfront, and, consequently, how deep to put a tunnel for a new water distribution system.

Sonar, the naval guide to the sea's bottom and to enemy submarines, told city engineers and the U. S. Geological Survey these facts. Sonar replaced the lengthy and costly method of taking innumerable rock borings along the proposed route of the tunnel.

The Geological Survey, in announcing completion of the project, said this method of mapping the depth of bedrock was developed for the Chicago project and had never been used before.

Sonar was not only able to reveal the depth to the top of the mud and gravel layers just beneath the water, but also the depth of the bedrock below the mud and gravel. A sound signal was given off by the sonar which bounced off both the bottom and the bedrock and was recorded in the Chicago city tug used for the survey.

The distribution tunnel, which will connect with a new filtration plant—the whole to cost $85,000,000—is planned to go 50 feet below the top of the bedrock to avoid seeping in of water or mud.

The survey found two hidden valleys which will make it necessary to place the tunnel deeper than had previously been contemplated.

Equipment came from the U. S. Navy Bureau of Ships, Electronics Division.

Science News Letter, July 28, 1951

TECHNOLOGY

Punch-Press Spreads Metal Like Butter for Plane Parts

➤ METALS FOR airplane parts are spread like butter by the heavy blows of a punch-press.

The so-called impact extrusion process, by which soft metals are forced into desired shapes, was adapted by the Lockheed Aircraft Corporation of Burbank, Calif., to tough aluminum alloys.

Engineers of the company have designed a 1,000-ton impact extrusion punch-press for the purpose. It will produce parts measuring up to 12 square inches in cross section and 24 inches in length. Use of the method will greatly decrease cost of the parts. Parts produced by impact extrusion are stronger than similar parts machined from castings on a lathe or drill press.

Science News Letter, July 28, 1951

ENE FIELDS

NUTRITION

Cow Eats 7½ Hour Day; Grass-Milk Ratio: 2½ to 1

➤ WHEN SHE'S working at top efficiency, Old Bossy turns grass into miik at the ratio of two and one-half to one.

Scientists of the University of California Agricultural Extension Service, Davis, Calif., report these figures on nature's four-footed milk-producing machine.

A cow eats about 125 pounds of five-inch-high forage a day—enough to produce 50 pounds of 3.5% milk. But where the grass is two to three inches high, she eats only 45 pounds a day.

Bossy grazes approximately seven and a half hours daily, regardless of how much feed she gets. She does 60% of her grazing during daylight hours and 40% at night, with 50 to 70 bites a minute. On the average, she chews her cud seven hours a day and spends 12 hours lying down, at nine different times. While grazing, she travels two and a half miles in the daytime and one and a half at night. She drinks 10 times a day.

If a cow chews her cud lying down, it does not necessarily mean that her appetite is satisfied. Unless she is given other feed, she has to get along on what she eats in seven and a half hours of grazing, whether she eats 40 pounds or 125 pounds.

Science News Letter, July 28, 1951

ENGINEERING

Reflected Electric Pulses Locate Faults in Power Line

➤ TROUBLES TO transmission that develop in power and other electric lines are being located from terminal stations by means of electric pulses sent out along the wire which are reflected back by any fault encountered on the line.

The instrument used is called the Linascope, and was developed by the research division of the Hydro-Electric Power Commission of Ontario. It was described at the American Institute of Electrical Engineers meeting in Toronto, Canada, by K. H. Kidd of the Commission.

The Linascope locates a fault by measuring the time taken for a short duration electrical pulse to travel along the transmission line to the fault, to be reflected from it, and return to the test terminal, he said. The instrument is about the size of a portable oscilloscope and can be operated from a 115-volt alternating-current supply or from a battery-operated vibrapack.

Mr. Kidd also informed the engineers that an automatic fault locator working on the same principle has been developed and is permanently connected to the transmission line. Transient as well as sustained faults are recorded automatically by obtaining the Linascope record while the current is still flowing.

The Linascope is of particular value where transmission lines cross terrain patrolled with difficulty, it was indicated. These troubles in transmission, which engineers call faults, may result from various causes but mostly from weather conditions. Some are caused in winter by sleet and wind, and some in summer due to lightning.

Science News Letter, July 28, 1951

TECHNOLOGY

Gadget Counts the Shocks Parcel Gets on Journey

➤ "HANDLE WITH Care," "Fragile," "This End Up."

British post office employees and expressmen are going to take these mottoes seriously when they get wind of a new gadget recently introduced by scientists in London.

The gadget, called a shock counter, measures the number and approximate intensity of shocks received by a package on a road or rail journey. However, its purpose is not to check up on expressmen, but on the efficiency of the packaging materials used.

Designed and used by the British Printing, Packaging and Allied Trades Research Association, the shock counter consists of a flap which moves against a restraining spring when subjected to a shock. It records on a counter. Association officials say there is no precise knowledge of the treatment which a parcel gets on its way to a customer and, therefore, no precise way of telling what the standard of packing should be. It is hoped that the shock counter will throw some light on the subject.

Science News Letter, July 28, 1951

INVENTION

Elevator Truck Body Has Hydraulic Power

➤ EASY LOADING and unloading are the advantages of a truck body which can be lowered almost to ground level when desired, and raised to the conventional height when the vehicle is ready for the road. In the preferred form, hydraulic power is employed to lower and raise both ends of this "elevator" body.

The truck can be a front-wheel drive type or the ordinary trailer with front end carried by the tractor unit. Rigid connection is provided between the power or cab section and the platform or body section. Patent 2,560,715 was awarded to Robert O. Bill, San Leandro, Calif., for this invention.

Science News Letter, July 28, 1951

CHEMISTRY

Canned Meat and Fish Retain Protein Value

➤ CANNED MEAT or fish contains as many amino acids, the building blocks of proteins, as the fresh product.

Dr. Max S. Dunn, professor of chemistry at the University of California at Los Angeles, has tested 74 specimens of canned meat and fish for amino acid content.

None of the 13 amino acids determined was significantly altered by the heat processing to which the canned samples had been subjected.

Tested were Atlantic mackerel, Atlantic sardines in oil, Pacific sardines in tomato sauce, Atlantic fish flakes (cod and haddock), salmon, spiced ham, whole ham, tuna in oil, beef and shrimp.

Dr. Dunn's experiments at U.C.L.A. were done cooperatively with the University of Wisconsin.

Science News Letter, July 28, 1951

TECHNOLOGY

New Lubricant Coating Aids Cold Working of Steel

➤ THE PROCESS of making steel wire or tubing by drawing the cold metal through dies or molds to obtain the desired size and shape is greatly aided by a new lubrication coating announced by the Pennsylvania Salt Manufacturing Company. The same coating is of value also in other steel cold working and cold extrusion operations.

The development is the result of joint research by the Pennsalt Company and the Heintz Manufacturing Company, of Philadelphia. It is based on techniques developed and used in Germany during World War II to produce cartridge cases, gun barrels, airplane parts and other tubular or cylindrical bodies.

The method employed is called the Pennsalt Foscoat Process. It consists of cleaning, pickling and application of a new phosphate coating and specially developed lubricants to steel.

A heat-resistant lubricating surface is formed which is chemically interlocked with the steel. It has exceptional adherence even under severe working conditions.

Foscoat is the name of the specially developed phosphate coating. It can be applied to the steel by immersion, flooding or spraying. Foslube is the name of the organic lubricant applied to the phosphate coating. It is designed to react chemically with the Foscoat, in addition to being physically absorbed.

The two principal limitations to cold drawing and cold extrusion operations are the lubrication and the ductility of the steel. The lubrication limitation is practically eliminated by the new lubrication film, it is claimed.

Science News Letter, July 28, 1951

ASTRONOMY

Jupiter Seen in Evening

Venus, departing at end of August, is replaced by Jupiter, only one-sixth as bright. Partial eclipse of sun scheduled Sept. 1 at sunrise.

By JAMES STOKLEY

➤ CONTINUING AS it has during spring and early summer, the planet Venus is still visible as the brightest object in the evening sky. By the end of August, however, it will have vanished from view, only to reappear soon afterwards in the early morning before sunrise.

But another bright planet is taking its place. This is Jupiter, which rises about two and three-quarter hours after sunset at the first of August, and about an hour and a half after that event at the close of the month. Though Jupiter is only about a sixth as bright as Venus, it is still many times more brilliant than the brightest star. So it can easily be located as it appears in the east in the constellation of Pisces, the fishes, during the late evening hours.

Neither of these planets—nor any other—is shown on the accompanying maps, which depict the appearance of the sky about 10 o'clock, your own kind of standard time, at the first of August, and at nine o'clock at the middle. (Add one hour if you are on daylight time.) Venus is moving through the constellation of Virgo, part of which is shown on the southern sky map, in the west, though the part in which the planet is visible is below the horizon.

Similarly, in the east, one star of the constellation of Pisces, the fishes, is shown, but much of the group, including that occupied by Jupiter, is out of sight. An hour or so later, however, the rotation of the earth has carried us farther east, so that the rest of Pisces has come into view, while Virgo, on the other hand, has gone completely under the horizon.

Brilliant Summer Star

Among the stars which, unlike the planets, shine by their own light, Vega, in Lyra, the lyre, is brightest. This group stands right at the zenith. Of all the stars in the sky (except the sun) only three others surpass Vega in brilliance, and only one of the trio (Sirius, the dog-star, visible on winter evenings) is generally seen from the United States and Canada.

Just to the east of Lyra, is the figure of Cygnus, the swan, shown partly on each of our two maps. The one for the northern sky shows Deneb, the brightest star in the group. The Milky Way runs right through Cygnus, as it does through Aquila, the eagle, a prominent constellation toward the south. Here can be seen Altair, another star of the first magnitude, which can easily be identified because of the two fainter stars attending it, one below and to the left; the other above and to the right.

Still farther south is Sagittarius, the archer. This also is in the path of the Milky Way, indeed, the brightest part of this vast swarm of faint stars is in the direction of Sagittarius. The group contains no star of the first magnitude, but nine of the stars in it outline the figure of a teapot, the handle to the left and the spout to the right. Again, the six stars that make the handle and the top of the lid also form a dipper, often referred to as the "milk dipper," no doubt from its position in the Milky Way.

Red-Colored Antares Visible

To the right of the Archer is Scorpius, the scorpion, the curved row of stars near the horizon forming its tail. A first-magnitude star that is quite red in color, called Antares, is supposed to mark the animal's heart.

One other star of the same magnitude is seen in the west, about a third of the way from the horizon to the zenith. This is Arcturus, in the group called Bootes, the bear-driver. This refers to its proximity to the constellation of Ursa Major, the great bear, which is next to it, lower and toward the right. In it is the well-known "big dipper." Just as one can use the line of the pointers, in the bowl of the dipper, to find Polaris, the pole star, so the curved line formed by the handle, followed toward the south, may be used to locate Arcturus.

As for the other planets, which have not been mentioned, Saturn is also in the evening sky, but not conspicuous. It also is in Virgo. It is in the part not shown on the map, not far from Venus, though only about a hundred and sixtieth as bright. Around Aug. 3 Mercury will also make a brief visit to the western evening sky, though it will not get far enough away from the sun's glare to be seen easily. Mars, the remaining naked-eye planet, during August will be in the constellations of Gemini, the twins, and Cancer, the crab, rising in the east about two hours ahead of the sun. Of second magnitude, it will not be conspicuous.

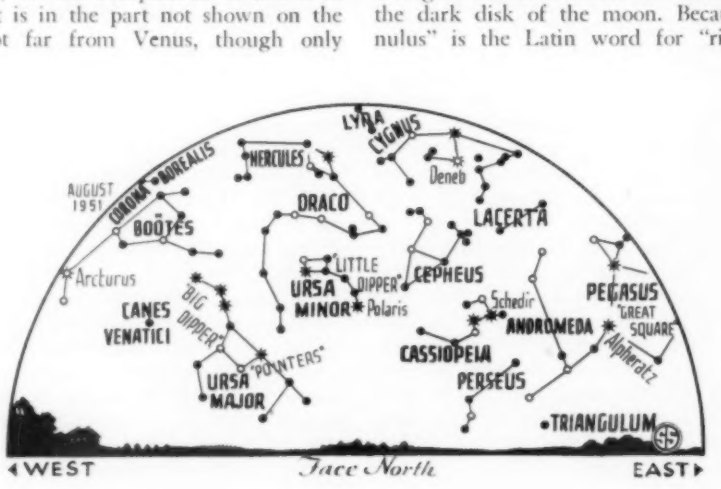
Annular Eclipse Scheduled

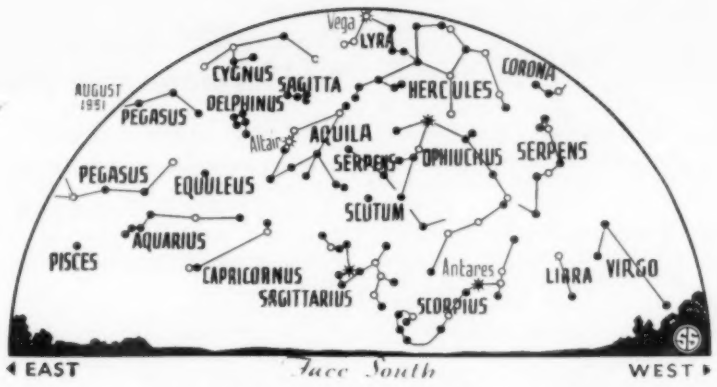
One of the most interesting of the events on the astronomical program for the near future is scheduled for early morning on Sept. 1. If an account of it were left until the appearance of the next of these articles, some readers might find it too late to be of use, so it will be described in this article for convenience.

The event referred to is an annular eclipse of the sun, which will be visible as a partial eclipse over much of the eastern part of the United States and Canada, as well as southwestern Europe and of all Africa.

A solar eclipse occurs when the moon comes between sun and earth. The distance of the sun changes during the year, from about 91,500,000 to 94,500,000 miles. Similarly, the moon's distance changes from 221,463 to 252,710 miles. Thus, the apparent size of these bodies is altered, being largest when they are closest and smallest when farthest away. Sometimes, the moon presents a disk in the sky that is a little larger than that of the sun and then, when there is an eclipse, the latter is completely hidden.

More frequently, however, the moon's disk is a little smaller than the sun's. Then an eclipse cannot be total, even though the moon does come precisely in front of the sun. Even at the middle of such an eclipse, a ring of the sun's surface is visible around the dark disk of the moon. Because "annulus" is the Latin word for "ring," an





☆ ✱ ○ • SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS

eclipse of this sort is called an "annular" eclipse, and that is what will happen in the early morning hours of Sept. 1.

The path, along which this annulus will be visible, starts as the sun is rising in southern Virginia and northern North Carolina; passes eastward and then southeastward across the Atlantic Ocean and Africa, ending as the sun is setting in Madagascar. Over a much larger area including, as noted above, eastern U. S. and Canada, Africa and southwestern Europe, as well as the Atlantic Ocean, southern Greenland and Iceland, the moon will partly hide the sun. The nearer the point to the path of the annular eclipse, the larger will be the area of the sun that will be hidden.

Eclipse Path Mecca

The annular path in the United States will be the Mecca of many amateur astronomers, for while such an eclipse is not of great scientific value, it is an interesting and unusual spectacle. This part of the path on land is about 280 miles long, and about 95 miles from north to south. It begins on a line about 30 miles west of Winston-Salem, N. C. Among the places within the path are Winston-Salem, Greensboro, and Durham, N. C., Danville, Petersburg, Norfolk, Virginia Beach and Newport News, Va. Richmond is just on the northern edge, with part of the city within it, while Raleigh, N. C., is just a few miles south of the southern edge.

Rises Partially Eclipsed

From places within this path, the sun will already be partly eclipsed as it rises on Sept. 1, and the annular eclipse will occur shortly afterwards. The farther east one is, the higher it will be, and the better in general will be one's chance of making a satisfactory observation. Vacationers at Virginia Beach, with hotel rooms facing the ocean, will find themselves in a very fortunate position for a good view of the phenomenon. From this location the annulus will appear at 5 hours 57 minutes 37 seconds a. m., EST, and will remain visible for 2 minutes 36 seconds. From Winston-Salem, the annular eclipse will start at 5:57:21 a. m., and will last 2 minutes 21 seconds.

The following table gives the time and extent of the partial eclipse for a number of American cities. Only at Orono, Maine, will the beginning of the eclipse occur after sunrise. Where no time is given for the middle, this also occurs before sunrise, and the magnitude of the eclipse, the percentage of the solar diameter that is covered by the moon's disk, is that for the sun at the time of rising. These data have been calculated in the Nautical Almanac Office of the U. S. Naval Observatory. (Times are local standard times.)

	Middle		End
City	A. M.	%	A. M.
Albany, N. Y.	6:02	82	7:10
Ann Arbor, Mich.		79	7:06
Atlanta, Ga.		75	7:03
Boston, Mass.	6:02	83	7:12
Buffalo, N. Y.	6:02	80	7:08
Chicago, Ill.		71	6:05
Cincinnati, Ohio		86	7:05
Cleveland, Ohio	6:01	90	7:06
Des Moines, Iowa		36	6:04
Harrisburg, Pa.	6:01	88	7:08
Kansas City, Mo.		26	6:04
Little Rock, Ark.		32	6:02
Louisville, Ky.		79	6:04
Madison, Wis.		62	6:05
Minneapolis, Minn.		43	6:04
Nashville, Tenn.		68	6:03
New Haven, Conn.	6:02	86	7:10
New Orleans, La.		34	6:00
New York, N. Y.	6:01	87	7:10
Orono, Maine	6:04	81	7:14
Philadelphia, Pa.	6:01	89	7:09
Pittsburgh, Pa.	6:01	88	7:07
Raleigh, N. C.	5:58	95	7:06
Richmond, Va.	5:59	96	7:07
St. Louis, Mo.		52	6:02
Tallahassee, Fla.		68	7:01
Washington, D. C.	6:00	92	7:07

In watching the eclipse, precaution should be taken. That is, one should never gaze directly at the sun without some protection for the eyes. A piece of very dense, exposed photographic negative film makes a good eyeshield. Ordinary sun glasses should not be used.

Celestial Time Table for August

Aug.	EST	
2	5:39 p. m.	New moon
3	2:00 p. m.	Mercury farthest east of sun
4	4:00 p. m.	Jupiter, which has been moving eastward among stars, turns around and starts moving toward west
5	1:45 a. m.	Moon passes Mercury
	3:54 p m.	Moon passes Venus
6	8:37 p. m.	Moon passes Saturn
10	7:22 a. m.	Moon in first quarter
12	early a. m.	Meteors visible radiating from constellation of Perseus
14	11:00 p. m.	Moon nearest, distance 225,000 miles
16	9:59 p. m.	Full moon
20	3:58 p. m.	Moon passes Jupiter
24	5:20 a. m.	Moon in last quarter
26	10:00 p. m.	Moon farthest, distance 251,600 miles
29	6:56 p. m.	Moon passes Mars
31	3:00 a. m.	Mercury between earth and sun
Sept. 1	sunrise	Annular eclipse of sun

Subtract one hour for CST, two hours for MST, and three for PST.

Science News Letter, July 28, 1951

VETERINARY MEDICINE

Anesthesia for Animals Successful in First Use

➤ FIRST SUCCESSFUL use of gas for general anesthesia of large animals is reported by Dr. S. A. Peoples of the department of pharmacology in the University of California's School of Veterinary Medicine, Berkeley.

Cyclopropane, the compound used in the experimental studies on cows, bulls, horses, and sheep, acts speedily and permits rapid recovery without dangerous side effects, he said.

The anesthetic may prove a distinct contribution, particularly in work with horses and bulls which present special problems, Dr. Peoples predicted in his preliminary report.

Already successful in the laboratory, the gas will be tested for practical use in further trials at the University of California, with the cooperation of clinical departments in the School of Veterinary Medicine.

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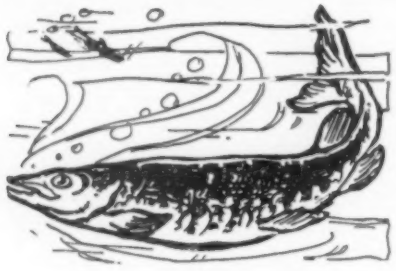
ICHTHYOLOGY

NATURE RAMBLINGS



Muskallunge

➤ THE TROUT is the lithe and gallant knight of the kingdom of fighting fishes, the Ivanhoe whose skill counts for quite as much as his slender strength. But the muskallunge is the Richard Coeur de Lion—the battler who has so much brute strength and weight and such a high heart to back it, that skill, though still there, takes second place.

Fly rods as delicate as knitting needles, tackle of almost gossamer lightness, hooks chivalrously left unbarbed, have no place in the tournament with this heavyweight fighter of the cold waters of the North. If you want the muskallunge you will have to come to the use of weight and strength, and as a rule, too, you will have to adopt lures that the super-orthodox fly fisherman would despise.

Spoons, plugs, live bait, and rather vicious hooks (so long as you don't imagine that you're after shark) are given the legitimacy of necessity. And usually after "Musky" strikes, the beginning fisherman will be glad he has all he's got, and wish he had more.

The muskallunge, of course, is a pike, the biggest and fiercest and most voracious of all the pike family. One doesn't feel quite the qualms about destroying him with heavy tackle that one might feel if he had the manners of a trout, for he is without question more than a bit of a bully—and, it is whispered, a bit of a cannibal as well, for he will eat his own roe-brothers with no conscience at all if he gets the chance.

There are a dozen different ways of spelling his name, all attempts at getting into English or French spelling the original Ojibwa "mashkinonje" or "maskinonje." Scientifically this big pike is known as Esox masquinongy. The Ojibwas didn't bother how to spell it. They just pronounced the word and let their paleface brothers who foolishly made black marks on white paper, try to work it out for themselves.

Little the musky cares what you call him. He is undisputed master of the northern lake waters, by virtue of weight and speed and voracious appetite and sheer truculence. The muskallunge has one advantage over the tarpon. After you have caught a tarpon, you cannot do much with him but have him skinned and mounted. But a musky is first-class eating.

Science News Letter, July 28, 1951

AERONAUTICS

Better Plane Windshield

➤ BETTER WINDSHIELDS for military aircraft is the primary goal of a program on which satisfactory progress is reported by the Armour Research Foundation of the Illinois Institute of Technology in Chicago.

The results of the program will be equally of value in civilian flying. Strength is a prime factor in airplane windshields, strength to withstand the extreme atmospheric conditions encountered and the speeds of modern planes.

Freedom from ice is also important. For military planes, windshields should be bullet-proof. These are objectives to be obtained. First steps in the program were extensive studies made by the Institute to determine why laminated windshields fail. Then laboratory tests were made to determine stresss occurring in a typical windshield now in service.

Laminated windshields, widely used on airplanes, consist of two panes of glass bonded together with a layer of a plastic, usually polyvinyl butyral. At normal temperatures, this plastic is elastic, making a valuable backing for the brittle glass. At low tempartures, however, the plastic contracts and becomes stiff, according to William E. Lauterbach of the Foundation. This may crack the glass and reduce visibility.

Another cause of windshield failure may be the "hot spot" created in the center when the windshield loses heat to the cold outer mounting, he said. Heating the mounting may solve this problem.

How best to keep the temperature of the outer surface of the windshield at 40 degrees Fahrenheit so no ice will form is one object of the research. The windshield heat comes from an electric current, passed over the edge through a film of conductive stannic oxide between the outer layer of glass and the plastic. Progress in the studies has advanced to a point so that Foundation scientists are ready to write specifications to be followed in designing windshields.

Science News Letter, July 28, 1951

MEDICINE

Coronary Sufferers Live Average Five Years

➤ SUFFERERS FROM angina pectoris and coronary occlusion, which are serious heart diseases, have on the average the chance of living about five years or more after their first attack, a study of 1,700 cases by Dr. Louis H. Sigler of Brooklyn, N. Y., shows.

A statistical study reported to the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION (July 14) shows that the over-all average age at onset of the illness for the 1,700 persons studied was 55.8 years. The average length of survival of the 679 patients who died was 4.7 years for males and 4.5 for females. For those who were still living when the study was made, the average age of survival was 5.3 years for males and 5.6 years for females.

One patient lived 35 years after the first attack, and the oldest age at death was 94 years. Over half of the patients lived beyond 60.

Science News Letter, July 28, 1951

BOTANY

Marijuana May Lurk In Window Boxes

➤ THE CURRENT "public enemy number one," marijuana, may be lurking in any window box, vacant lot, or back yard, in the innocent guise of the common hemp plant. This warning is from Miss Jessie Fiske, professor of botany at New Jersey College for Women in New Brunswick, N. J.

"The word 'marijuana' itself is misleading," says Miss Fiske, "for people forget that it comes from the common hemp plant, not from any mysterious source.

"This tall herb is distinguished by bright green, spear-shaped, tooth-edge leaves, with flowers that are not very prominent. Like a weed, the hemp grows easily, almost anywhere, with or without cultivation."

The word "marijuana" does not refer to the plant itself, but to the resin which is derived from the upper leaves and flowers of the weed, Miss Fiske explains.

No special skill or elaborate process is needed to extract the drug from the plant, for the tops and leaves are merely dried and crushed into a coarse powder. That powder is then rolled into cigarettes, which look very much like any ordinary brand.

"Because the hemp plant has great commercial value," says Miss Fiske, "it is widely cultivated in some areas for legitimate purposes. The greatest economic value lies in its fiber, which is used for rope, twine, hats and certain grades of paper."

The drug is sometimes used in pharmaceutical preparations, she adds, but its actual medical use is questionable and very limited.

Science News Letter, July 28, 1951

MEDICINE

Shorter Polio Recovery

Streamlined, overall care program for polio patients will shorten convalescence time. Physical therapy methods need reexamination.

➤ A "STREAMLINED" overall care program for the paralyzed polio patient will shorten his convalescence and save money as well as time, Dr. Charles L. Lowman of Los Angeles declares in a report to the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION (July 21).

The usual method of giving physical therapy for 12 to 16 months, in the hope of restoring muscle strength, before operations are undertaken should be reexamined, Dr. Lowman declares.

Recovery of muscle strength "starts toward a plateau at the sixth month and flattens out about the eighth month," Dr. Lowman observes from results of one large survey.

If an operation is needed for further recovery, it should not be delayed after this time, appears to be Dr. Lowman's opinion. It is not necessary to wait another year or so. In fact, deformity may be avoided and recovery speeded if needed operations are performed early.

Important also in deciding about operations is the state of the trunk and shoulder girdle muscles. Improvement through muscle training in the muscles of a paralyzed arm will not help if the shoulder girdle remains weak. It may even lead to deformity unless muscle transplanting operations are done to strengthen the weak shoulder girdle. The same is true of leg and trunk muscles.

Almost half the patients who recover without significant weakness or paralysis could be discharged from hospital care much earlier than they now are if the isolation care period is reduced to one week, Dr. Lowman states.

Money and time can also be saved by training parents, public health personnel and volunteer workers to take over some home physical therapy treatment of polio patients.

Science News Letter, July 28, 1951

PETROLEUM ENGINEERING

Naphtha Aviation Gas

➤ LOW-GRADE virgin gasolines, naphthas rated at 55 octane, are converted into high-octane aviation gasoline by a new process developed by the M. W. Kellogg Company of New York.

The process employs what is called a fluid hydroformer. It replaces the so-called fixed-bed hydroforming. Products range from 98 to 175 in octane rating. With pilot plant tests completed, construction will start soon on the first commercial fluid hydroformer. It will be at the Destrehan, La., plant of the Pan-Am Southern Corporation. It will be a 2,000-barrel-per-day-unit.

A hydroformer is a refinery device used in the process of improving petroleum products in which hydrogen is used. In the fixed-bed type, the catalyst employed to aid in the conversion processes is in a stationary position. In the fluid hydroformer the same principle is used as is now widely employed in the fluid catalytic cracking process. It utilizes a finely powdered catalyst which is supported on vapors throughout the retort and acts as a turbulent fluid.

The new process has several advantages over the fixed-bed hydroformers built during World War II to provide great quantities of toluene and aviation gasoline. In these earlier hydroformers, reaction beds had to be taken out to be regenerated. The new fluid catalyst system withdraws the catalyst in a continuous process, regenerates it and returns it in a continuing cycle to the retort.

It is expected that the new process will give yields up to five per cent higher than the old, due largely to the uniform temperature throughout the bed. The final gasoline product will also contain less butane. The process is of particular interest at the present time because of the greatly increased demands for fuels in aviation.

Science News Letter, July 28, 1951

PHYSICS

Jets Won't Catch Up With Bullets They Shoot

➤ SCIENTISTS ARE just beginning to worry about a problem peculiar to the jet age: With jet planes attaining such fast speeds, will they catch up with their own bullets and do themselves damage?

So far, the answer is: Possible, but highly improbable. This is the way Orin P. Gard, chief of the analysis and evaluation unit at the Air Development Force, Wright-Patterson Air Force Base, puts it in the ARMY INFORMATION DIGEST (July):

"For all practical purposes, the likelihood of the airplane overtaking its own bullets and suffering damage from them can be neglected. In the case of an abused gun firing unstable bullets at lowered muzzle velocity, however, the likelihood might be increased."

Study of the possibility of a jet plane bringing itself down with its own guns comes under the heading of "aeroballistics" a word derived from aerodynamics and ballistics. In aeroballistics, the problems of shooting various kinds of projectiles—bombs, bullets, rockets and guided missiles—from planes are studied.

Science News Letter, July 28, 1951

NUTRITION

Ice Cream Meal for Persons on Reducing Diet

➤ SALAD LUNCHES or dinners, tempting to many in hot weather, are no treat to the person on a reducing diet who may eat salad for lunch the year around. He can vary the monotony, with perhaps extra pleasure these hot days, by making a meal of ice cream. Two dishes of plain ice cream make a satisfying reducing lunch for a physically active man, according to figures worked out by Dr. A. C. Dahlberg at the New York State (Cornell) Experiment Station at Ithaca, N. Y.

This ice cream lunch would supply from 200 to 400 calories. This would be a reducing meal for an active 154-pounder who needs about 3,000 calories to maintain his body weight. If you are on a reducing diet that calls for fewer than 3,000 calories, and most of them do, you can figure how many calories you have left for the other two meals and decide whether you want to use 200 or 400 of them for an ice cream lunch. Such a lunch might be especially convenient on a day when you have to get lunch in a hurry at a counter where sandwiches, cake and pie might otherwise tempt you.

The protein of the ice cream, Dr. Dahlberg pointed out in a report to the U. S. Department of Agriculture, is in good relation to its calories. The ice cream lunch would also provide important minerals and vitamins. Its sugar relieves hunger promptly. Its milk sugar and milk fat are digested more slowly, and thus furnish energy gradually for a few hours.

Ice cream is really a nutritious food rather than just a sweet ending for a meal. Besides offering top quality protein, it gives calcium and several essential vitamins. Recent studies show that one of these vitamins, riboflavin, in ice cream is more fully used by the body than riboflavin in some other foods. This is important because people who do not take much milk are likely to run short of this vitamin.

Science News Letter, July 28, 1951

Books of the Week

TO SERVE YOU: To get books, send us a check or money order to cover retail price. Address Book Dept., SCIENCE NEWS LETTER, 1719 N St., N. W., Washington 6, D. C. Ask for free publication direct from issuing organizations.

CHIGGER CONTROL—Bureau of Entomology and Plant Quarantine—*Govt. Printing Office*, 7 p., free upon request to U. S. Department of Agriculture, Washington, D. C. Telling how to make picnic spots more comfortable with chlordane, toxaphene and lindane dusts or sprays. (See page 62.)

THE COHONINA CULTURE OF NORTHWESTERN ARIZONA—John C. McGregor—*University of Illinois Press*, 158 p., illus., paper, $2.00. A study of a prehistoric Indian tribe, its way of life, contacts with neighbors, and an outline of its history.

THE EDUCATION OF MAN: APHORISMS—Heinrich Pestalozzi—*Philosophical Library*, 93 p., $2.75. A collection of pithy sayings designed to present some of the underlying basic principles of the philosophy of education of this great Swiss.

ELECTRONICS BUYERS' GUIDE—Donald G. Fink—*McGraw-Hill*, 604 p., illus., paper, $2.00. A directory of buying-source listings, product advertising and reference material.

ELEMENTARY PROBLEMS IN ENGINEERING—H. W. Leach and George C. Beakley—*Macmillan*, 269 p., illus., $3.50. A text designed to aid students in engineering problems courses make the transition from high school to the college engineering level.

THE FILM INDUSTRY IN SIX EUROPEAN COUNTRIES—Film Centre—*UNESCO (Columbia University Press)*, 156 p., paper, 65 cents. A detailed study of the film industry in Denmark as compared with that in Norway, Sweden, Italy, France and the United Kingdom.

FOUNDATIONS OF BIOLOGY—Lorande Loss Woodruff and George Alfred Baitsell—*Macmillan*, 7th ed., 719 p., illus., $5.50. Revised to include selected new material on vertebrate structure and function, new illustrations, and an enlarged glossary.

FROM A DOCTOR'S HEART—Eugene F. Snyder—*Philosophical Library*, 251 p., illus., $3.75. An autobiography which tells the story of a general practitioner and touches upon the national, racial and political problems of the day.

GAS TURBINES AND JET PROPULSION—G. Geoffrey Smith—*Aircraft Books*, 5th ed., 393 p., illus., $7.50. Revised edition of this authoritative text and reference book on the newest method of transportation.

HYPNOIDAL PSYCHOTHERAPY—Margaret Steger—*Froben*, 150 p., $3.50. Presents the author's method of using the half-sleeping (hypnoidal) state in the treatment of emotional disorders such as alcoholism. The book is designed for reading by laymen as well as the specialist, but the author warns against the use of hypnosis by laymen and the dangers of hypnosis no matter by whom employed (See SNL, June 23, p. 398.)

INTRODUCTION TO MOTHERHOOD—Grantly Dick Read—*Harper*, 104 p., illus., $1.75. A basic primer for a woman expecting her first baby, telling exactly what to expect and how to prepare for "natural childbirth."

MAN AND THE LIVING WORLD—E. E. Stanford—*Macmillan*, 2nd ed., 861 p., illus., $5.50. Intended to accompany a lecture course with demonstrations and visual aids.

MEETING DEFENSE GOALS, A MUST FOR EVERYONE: Second Quarterly Report to the President—Charles E. Wilson—*Govt. Printing Office*, 48 p., illus., paper, 30 cents. A report on the defense mobilization of the United States and on the progress of building defensive strength throughout the free world.

THE MENEHUNE OF POLYNESIA AND OTHER MYTHICAL LITTLE PEOPLE OF OCEANIA—Katharine Luomala—*Bernice P. Bishop Museum*, Bulletin 203, 95 p., paper, $1.50. Belief in these night-working dwarfs persists in Hawaii even past the age when belief in Santa Claus is given up. In recent years the folklore is being commercialized.

POPULATION ON THE LOOSE—Elmer Pendell—*Funk*, 398 p., illus., $3.75. Discussing an urgent current problem.

REPORT OF THE COUNCIL TO THE ASSEMBLY ON THE ACTIVITIES OF THE ORGANIZATION IN 1950—*International Civil Aviation Organization*, 154 p., paper, 50 cents. The supporting documentation for the 5th session of the Assembly of the International Civil Aviation Organization.

SCIENCE NEWS 20—A. W. Haslett—*Penguin Books*, 128 p., illus., paper, 50 cents. This volume includes articles on The Control of Insect Populations, Colors of Stars, Photogeology, and The Origin Of Language.

SCIENCE: SENSE AND NONSENSE—J. L. Synge—*Norton*, 156 p., $2.75. A discussion of the philosophy of science enlivened by a blend of levity and seriousness and the use of meaningful anecdotes.

A TEXTBOOK OF MEDICAL CONDITIONS FOR PHYSIOTHERAPISTS—Joan E. Cash—*Lippincott*, 348 p., illus., $5.00. British author explains some of the medical conditions most often seen in a "department of physical medicine."

TWILIGHT IN SOUTH AFRICA—Henry Gibbs—*Philosophical Library*, 288 p., illus., $4.50. A study of South Africa as it is today including discussion of health and living conditions and chapters on the race, nationalist and communist problems.

UNITED STATES CIVIL DEFENSE: POLICE SERVICES—Federal Civil Defense Administration—*Govt. Printing Office*, 46 p., paper, 20 cents. This administrative guide suggests methods and techniques for assisting police officials responsible for organizing or directing police civil defense services.

● RADIO

Saturday, Aug. 4, 1951, 3:15-3:30 p. m. EDT

"Adventures in Science," with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Dr. Carl Taylor, medical missionary connected with the Presbyterian Board of Foreign Missions, discusses "Exploration in the Little-Known Kingdom of Nepal."

PUBLIC HEALTH

Best Advice to Beat Chiggers: Avoid Them

➤ BEST THING to do about chiggers is to avoid them. If you are going to be in a heavily infested area, you can use one of the new insect repellants. (See SNL, July 21, p. 40.) These are for putting on yourself and your clothing. Chiggers can also be controlled by spraying infested grounds. Sulfur formerly was used for this and for personal protection. The new sprays are said to be better and sulfur is reported in short supply this year because of defense needs for it.

Contrary to popular belief, chiggers do not burrow into the skin and stay there. They attack like ticks, usually in skin depressions at the base of hair. They usually attack the legs and accumulate in regions where bands, such as belts and girdles, bar their movement. After they have fed, they back off and drop off. The poison they secrete, which is what causes the intense itching and irritation, stays for some time. Besides the itching, there is danger of infection from scratching.

People have used everything from kerosene to chloroform to stop the itching of chigger bites. Authorities do not advise either kerosene or chloroform, however. Neither is safe unless very carefully used. Washing with soap and water or with plain water or salt water are advised. This should be done as soon as possible after getting into a chigger infested area. Just brushing with a cloth or towel will get the chiggers off.

Chiggers are most often found in low, damp places well covered with vegetation, such as margins of lakes and streams, shaded woods, high grass or weeds, fruit orchards and berry patches. They may also be found on lawns, golf courses and parks. A simple way to locate possible chigger areas is to put a piece of black cardboard edgewise on the ground and watch it for a few minutes. If you see small yellowish or pinkish mites moving rapidly over the cardboard and accumulating on the upper edge, you have located a chigger area.

For information on chlordane, toxaphene and lindane dusts or sprays for the ground, write the U. S. Department of Agriculture in Washington, D. C., for leaflet 302 on chigger control. (See page 62.)

If the itching from chiggers is intense, ask your doctor about some of the new itch remedies, such as antihistamines.

• New Machines and Gadgets •

For addresses where you can get more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, 1719 N ST., Washington 6, D. C. and ask for Gadget Bulletin 580. To receive this Gadget Bulletin without special request each week, remit $1.50 for one year's subscription.

VINYLITE TABLECLOTH, a durable plastic cover easily cleaned with a wet sponge and soap, can be used either side up. One side has a printed plaid effect, while the reverse side looks and feels like a different fabric weave and also has a solid contrasting color.

Science News Letter, July 28, 1951

DRINKING TUBE for the youngster, on which the government has just issued a patent, is an elongated affair, made of transparent material, folded in a series of parallel sections. The purpose of the folding is to hold the child's attention while the liquid passes through.

Science News Letter, July 28, 1951

STORAGE BATTERY tester, developed by the Army Signal Corps, can be mounted on the steering wheel of an automobile and will tell the driver if there is enough juice in the battery to start the engine. It will also indicate if the battery is getting too much charge from the generator.

Science News Letter, July 28, 1951

PLATE FOR printing, a pre-sensitized photo-offset plate ready for exposure and use without further preparation, is made entirely of aluminum and is said to be the first fully pre-sensitized all-metal plate ever made for general use. It is capable of extended press runs.

Science News Letter, July 28, 1951

"AIR-CONDITIONED" ironing board is constructed with a metal frame holding a surface of "expanded" metal, as shown in the illustration. A sheet of metal has been pierced and stretched into the smooth diamond pattern surface. This open-mesh

top gives the ventilation that permits garments being ironed to dry quickly.

Science News Letter, July 28, 1951

DEHUMIDIFIER for the home or office is an improved type that uses the same principle as the electric refrigerator. Moisture-soaked room air is drawn into it by a fan, and passes over cold coils which condense the moisture into water that drops into a pan below.

Science News Letter, July 28, 1951

SWIMMING POOL cover is a sheet of vinylite plastic which, in use, fits over the side walls of the pool with the main part of the sheeting floating on the water. It not only keeps the surface free from dust and debris but it decreases evaporation and prevents escape of chlorine from chlorinated water.

Science News Letter, July 28, 1951

DOOR-HOLDER, to keep the door open while a person with full arms is passing through, is an inexpensive device to fasten to the top of the door and the frame. It holds the door open for an adjustable time, depending on the force used to open it.

Science News Letter, July 28, 1951

Do You Know?

There are more than 12,000 varieties of fresh and salt water *fish* in the world.

The so-called jumping *mouse* can make a broad jump of 10 feet or more and can leap six feet high.

The 30-pound liver of the shark yields over 2.5 gallons of oil which is 70 times as rich in *vitamin D* as cod liver oil.

King *snakes* are immune to the poison of rattlesnakes and other poisonous reptiles and, therefore, do not hesitate to attack them under provocation.

AGRICULTURE

Cleaner Cotton Through Use Of Leaf-Shedding Chemicals

➤ BETTER GRADES of cotton lint are expected this year through wider use of chemicals that force the cotton plants to shed their leaves earlier, permitting harvest of cleaner bolls.

Use of these chemicals, technically known as defoliants, will help the U. S. meet its 1951 production goal of 16 million bales, Dr. W. H. Tharp, plant scientist with the U. S. Department of Agriculture, points out.

Cotton plants can be forced to shed their leaves only when they are fully mature so correct timing is essential in spraying or dusting the defoliants. The leaf-shedding chemicals, such as calcium cyanamide, help give cleaner harvests whether the cotton is picked by hand or by mechanical picker. The treatment also aids in insect control and reduces the number of boll weevils carried over in the field.

Science News Letter, July 28, 1951

INVENTION

Meat-Less Food Looks And Tastes Like Sausage

➤ A NUTRITIOUS human food that contains no meat but looks, tastes and smells like country sausage or hamburger, brought patent 2,560,621 to Charlton L. Wrenshall, Jacksonville, Fla. Its basis is non-fat dry milk solids. From 36% to 40% of these solids from skim milk is protein, and also contained in skim milk are the carbohydrates and mineral of the original milk. Additives, such as potato, cereals, fat, coloring matter and flavoring materials, give the preparation, when cured by a heat treatment, texture and other desired qualities.

Science News Letter, July 28, 1951

Science FUNdamentals

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